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10/579,811	05/16/2006	Gilad Lerman	36048/US/2-475396-00173	5970

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EXAMINER	
NEGIN, RUSSELL SCOTT	
ART UNIT	**PAPER NUMBER**
1631	

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12/09/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/579,811	LERMAN ET AL.	
	Examiner	Art Unit	
	RUSSELL S. NEGIN	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 August 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) *9-11,21-23,33-35 and 40-42* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,12-20,24-32,36-39 and 43-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Comments

Claims 9-11, 21-23, 33-35, and 40-42 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10 December 2008.

Accordingly, claims 1-46 are pending and claims 1-8, 12-20, 24-32, 36-39, and 43-46 are examined in the instant application.

Withdrawn Objection/Rejections

The objection to the declaration is withdrawn in view of arguments filed on pages 12-13 of the Remarks.

The rejections of claims 25-32 and 36 under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter are withdrawn because the claims are drawn to a storage medium (statutory subject matter) with a practical application of identifying statistical outliers.

The rejections of claims 1-3, 13-15, 25-27, 37-39, 12-20, 24-32, and 36-39 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention are withdrawn in view of amendments filed to the instant set of claims on 31 August 2009.

The rejections of claims 1, 4-5, and 37-38 under 35 U.S.C. 102(b) as being anticipated by Pearson [Philosophical Magazine, volume 2, 1901, pages 559-572] are withdrawn in view of amendments filed to the instant claims on 31 August 2009.

The rejections of claims 1-3 and 37-39 under 35 U.S.C. 102(b) as being anticipated by Mutch et al. [BMC Bioinformatics, volume 3, June 2002, 11 pages, on IDS] are withdrawn in view of amendments filed to the instant claims on 31 August 2009.

The rejections of claims 1, 4-5, 13, 16-17, 25, 28-29, and 37 under 35 U.S.C. 102(b) as being anticipated by Schwartz et al. [US Patent 6,221,592; issued 24 April 2001; filed 20 October 1998] are withdrawn in view of amendments filed to the instant claims on 31 August 2009.

The rejections of claims 6-8, 12, 18-20, 24, 30-32, and 34 under 35 U.S.C. 103(a) as being unpatentable over Schwartz et al. as above, in further view of Beroza et al. [Journal of Computational Chemistry, volume 17, 1996, pages 1229-1244] are withdrawn in view of amendments filed to the instant claims on 31 August 2009.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The following rejections are reiterated for claims 1-8, 12-20, 24, and 37-39 but newly applied for NEW claims 43-44 and 46:

Claims 1-8, 12-20, 24, 37-39, and 43 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-8, 12-20, 24, 37-39, and 43 are drawn to methods, software, and systems for identifying statistically-outlying data points in at least one dataset.

This rejection is in line with the recent decision in *In re Bilski*, 545 F.3d 943, 88 USPQ2d 1385 (Federal Circuit, 2008). In the instant case, the claims are drawn to an abstract idea and therefore must be evaluated further for providing a practical application of the judicial exception. In order for a claim to provide a practical application, the claim **must meet** the machine-or-transformation test in order to be eligible under 35 USC 101 as statutory subject matter (*In re Bilski*, 545 F.3d 943, 88 USPQ2d 1385 (Federal Circuit, 2008). In other words, the prohibition on patenting abstract ideas has two distinct aspects: (1) when an abstract concept has no claimed practical application, it is not patentable; (2) while an abstract concept **may have a practical application,** a claim reciting an algorithm or abstract idea can state statutory subject matter only if it is embodied in, operates on, transforms, or otherwise is tied to another class of statutory subject matter under 35 U.S.C. §101 (i.e. a machine, manufacture, or composition of matter). (*Gottschalk v. Benson*, 409 U.S. 63, 175 USPQ 673, 1972), as clarified in *In re Bilski*, 545 F.3d 943, 88 USPQ2d 1385 (Federal Circuit, 2008) the test for a method claim is whether the claimed method is (1) tied to a particular machine or apparatus or (2) transforms a particular article to a different state or thing.

In the instant case, a physical transformation of matter is not provided, as the instant claims merely provide steps of information manipulation. Therefore, none of said steps result in a physical transformation of matter such that the whole of the claim is statutory.

Further, the method claims (claims 1-8, 12, and 43) are not so tied to another statutory class of invention because the **method** steps that are critical to the invention are "not tied to any **particular apparatus** or **machine**" and therefore do not meet the machine-or-transformation test as set forth in *In re Bilski* 545 F.3d 943, 88 USPQ2d 1385 (Federal Circuit, 2008). While new claim 43 recites use of either a display OR a storage arrangement, these embodiments constitute insignificant post-solution activity as they do not recite a significant tie between the method steps of the body of the claim to particular apparatus or machine.

It is noted that claims 13-20 and 24 are drawn software operable by a processing arrangement. Since these claims are drawn to software, per se (all software is interpreted to be operable by processing arrangements), the instant set of claims is not statutory.

It is noted that claims 37-39 are drawn to a system for analyzing data for outliers using a processing arrangement. Since this set of claims encompasses the interpretation of a processing arrangement as not requiring structure (i.e. a structural element corresponding to a processing arrangement, such as a processor, is not recited), claims 37-39 do not recite and structure in the system for analyzing of the data.

Consequently, claims 37-39 are interpreted to encompass computer programs; computer programs, per se, are not statutory.

It is noted that claims 25-32, 36, and 45 ARE statutory because the claims are drawn to a storage medium (storages media are interpreted to possess structure) and a practical application of finding outliers in data sets.

It is noted that claims 44 and 46 ARE statutory because each recites the practical application of configuring the processing arrangement to either a display or a storage arrangement.

Response to Arguments:

Applicant's arguments filed 31 August 2009 have been fully considered but they are not persuasive.

Applicant first argues on page 15 of the Remarks that the amendments to claim 1 requiring "a processing arrangement" results in a tie to a particular machine and therefore causes method claims 1-8 and 12 to be statutory. This argument is not persuasive because a processing arrangement does not necessarily have to encompass a processor (or any other structural embodiment). Consequently, this amendment does not require a tie to a particular machine (or any structural element, for that matter) as required. Furthermore, while new claim 43 does recite a tie to a display or storage element, this tie is an insignificant tie related to post-solution activity and therefore is not statutory. While applicant argues on pages 15 and 16 of the Remarks

that the instant claims provide a useful, concrete and tangible result, it is noted that this test no longer applied to considering statutory subject matter in processes.

With regard to non-process claims 13-20, 24-32, 34, and 37-39, applicant argues that for the same reasons for the process claims (i.e. the machine-or-transformation test of *Bilski*), the instant set of claims are statutory. This argument is not persuasive because the machine-or-transformation test does not apply to non-process claims. For the reasons discussed above, the instant set of claims is not statutory.

Claim Rejections - 35 USC § 112

INDEFINITENESS

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The following rejection is reiterated:

Claims 4-8, 12, 16-20, 24, 28-32, and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Steps d of claims 4, 16 and 28 are indefinite because it is indefinite as to the means of shifting a matrix which represents data values, by a mass (i.e. a weight). For the purposes of examination, it will be interpreted that this step comprises shifting the rows of a matrix by a constant.

Response to Arguments:

Applicant's arguments filed 31 August 2009 have been fully considered but they are not persuasive.

Applicant argues on page 18 of the Remarks that the amendments to claims 4, 16, and 28 overcome the rejections of record. This argument is not persuasive because it is noted that claims 4, 16, and 28 are original claims. Applicant further argues on page 18 of the Remarks that since the specification discloses that shifting rows of matrices requiring shifting the center of mass of the set, the claims are definite. This argument is not persuasive because while the specification discloses one interpretation of the instantly rejected claims, these claims are not closed to only this interpretation. In other words, absent this teaching of the specification as part of the instantly rejected claims, the claims are open to broader (and in this case indefinite) forms of interpretation.

Priority

It is noted that this application is a national stage application of PCT/US04/38413, filed 16 November 2004, which in term claims benefit to U.S. provisional application 60/520,819, filed on 17 November 2003. Since all of the limitations of the instant set of claims are disclosed in the specification, drawings, and/or claims of 60/520,819, the instant claims receive the benefit date of this provisional application (17 November 2003).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

The following rejection is newly applied:

Claims 1-3, 5, 37-39, 43, and 46 are rejected under 35 U.S.C. 102(a) as being anticipated by Quackenbush [Nature Genetics Supplement, volume 32, 28 November 2002, pages 496-501].

Claim 1 is drawn to a process for identifying statistically outlying data points in at least one dataset. The method comprises receiving the at least one dataset. The method further comprises using a processing arrangement and an adaptively selected multiscale strip function, identifying the statistically-outlying data points present in the at least one dataset based on the information contained in the at least one dataset.

Claim 37 is drawn to a system comprising a processing arrangement configured to execute the method of claim 1.

It is noted that the instant specification explains a multiscale strip function on page 4, lines 6-20. Specifically, this function is disclosed as comprising three strips: a first strip with data and outliers, a second strip at different scales and locations and approximately the same ratio between the points inside versus outside the strip, and a third strip that adaptively estimates standard deviations more precisely.

The article of Quackenbush studies microarray data normalization and transformation. Figure 3 on page 499 of Quackenbush illustrates a set of data with outliers in red and non-outliers in blue; outliers are chosen based on information in the combined data set (i.e. standard deviations from the mean of the data).

Additionally, it is interpreted that Figure 3 on page 499 of Quackenbush illustrates an entire first strip of data (the combination of red and blue). Within the entire set of data, the second strip of data, the blue data is selected on the basis of two standard deviation cuts and at scales and locations within the entire data set such that there is approximately the same ratio between the points inside (blue data) versus outside (red data) the strip. Furthermore, the local variation of data is plotted as a function of intensity in Figure 4 on page 500 of Quackenbush, wherein a different color is used to code for each number of standard deviations from the mean (i.e. red for within one standard deviation, blue for between one and two standard deviations and green for in excess of two standard deviations).

With regard to claims 2-3, Figure 3 and 4 of Quackenbush reveal differences in color intensity (red vs. green- physiological differences in gene expression result in different expression ratios of these colors) resulting from differential gene expression between data sets [see abstract and introduction of Quackenbush on page 496].

With regard to claim 5, all of the data are points are in real space in the Figures of Quackenbush.

With regard to claims 38-39, at least one dataset shown in the Figure 3 on page 499 of Quackenbush is generated. Furthermore, the first paragraph of Quackenbush on page 499 teaches the use of a detector to measure fluorescence within the microarray for such plots.

With regard to claims 43 and 46, the statistically outlying data points are displayed in the form of Figures within Quackenbush.

Response to Arguments:

Applicant's arguments with respect to the instantly rejected claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following rejection is NEWLY applied:

35 U.S.C. 103 Rejection #1:

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Quackenbush as applied to claims 1-3, 5, 37-39, 43, and 46 above, in further view of Pearson [Philosophical Magazine, volume 2, 1901, pages 559-572].

Claim 4 is further limiting comprising computing the principal axis of the at least one dataset.

Quackenbush teaches using multiscale strip function the analyze data sets in order to distinguish outlying data from the non-outlying data, as discussed above.

Quackenbush does not teach rotation and shifting in order to determine principal axes.

The article of Pearson studies regression and the fits of systems of points in space. Specifically, the figure on page 566 of Pearson illustrates the acquisition of a dataset and a use of an ellipse to statistically distinguish outlying data points within the dataset in two dimensional space. The figure on page 566 of Pearson also illustrates the computation of the principal axis of the dataset wherein the ellipse is rotated for

optimal component analysis of the data and the ellipse is shifted such that the center of mass is in the center of the graph (C).

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to modify the detection of outliers using the multiscale strip functions of Quackenbush by use of the principal component analysis in Pearson wherein the motivation would have been that the shifting and rotation of the frame for the principal components facilitated the analyzing the outlying data (see figure on page 566 of Pearson).

Response to Arguments:

Applicant's arguments with respect to the instantly rejected claims have been considered but are moot in view of the new ground(s) of rejection.

It is noted that although the reference of Pearson is reiterated from the previous Office action, the role of Pearson is as a supporting reference to show techniques of principal component analyses. The limitations of multiscale strip functions are taught in the study of Quackenbush.

The following rejection is NEWLY applied:

35 U.S.C. 103 Rejection #2:

Claims 6-8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Quackenbush as applied to claims 1-3, 5, 37-39, 43, and 46 above, in further view

of Beroza et al. [Journal of Computational Chemistry, volume 17, 1996, pages 1229-1244].

Claims 6-8 and 12 and further limiting and recite limitations with regard to computing stopping points using a top-down procedure ultimately used to define boundaries. It is noted that the limitations of the equations and limitations in claim 8 (and later in the Office action, corresponding claims 20 and 32), are interpreted such that the stopping point for the computation is set at an interval within a grid when a specific fraction of outliers is greater than a user defined parameter.

Quackenbush teaches using multiscale strip function to analyze the data sets in order to distinguish outlying data from the non-outlying data, as discussed above.

Quackenbush does not teach computing stopping points using a top-down procedure ultimately used to define boundaries between data and outlying data.

The article of Beroza et al. studies calculation of amino acid ionization constants using continuum electrostatic modeling. Specifically, Figure 2 on page 1237 of Beroza et al. illustrates an iterative top-down procedure of focusing on a portion of a protein. Two stopping points are shown wherein the region of the protein lying outside the matrix is considered to be outlying. The calculations of charge are continuum averages over an entire Monte Carlo simulation as taught in the title and page 1230 of Beroza et al. The user chooses the parameters by which the dielectric grid focuses.

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to modify the detection of outliers in Quackenbush by use of the iterative focusing and stopping of Beroza et al. wherein the motivation would have been

that this top-down "zooming" provides a more detailed picture (albeit over a smaller region) of a biological process of interest. There would have been a reasonable expectation of success in applying this specific proteomic study of Beroza et al. to the more general genetic study of Quackenbush because the algorithm taught in Beroza et al., while specific to proteins, is a mathematical focusing algorithm generally applicable to a variety of processes, including data analysis- including the plots in Quackenbush.

Response to Arguments:

Applicant's arguments with respect to the instantly rejected claims have been considered but are moot in view of the new ground(s) of rejection.

It is noted that although the reference of Beroza et al. is reiterated from the previous Office action, the role of Beroza et al. is as a supporting reference to show top-down procedures and boundaries in data. The limitations of multiscale strip functions are taught in the study of Quackenbush.

The following rejection is NEWLY applied:

35 U.S.C. 103 Rejection #3:

Claims 13-15, 17, 25-27, 29, and 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Quackenbush as applied to claims 1-3, 5, 37-39, 43, and 46 above, in further view of Schwartz et al. [US Patent 6,221,592; issued 24 April 2001; filed 20 October 1998].

Independent claim 13 is drawn to a software arrangement for executing the method of claim 1. Likewise, dependent claims [14-15, 17, and 44] correspond to claims [2-3, 5, and 43], except the claims are drawn to software instead of a method.

Independent claim 25 is drawn to the storage medium for executing the software of claim 13. Likewise, dependent claims [26-27, 29, and 45] correspond to claims [2-3, 5, and 43], except the claims are drawn to a storage medium instead of a method.

Quackenbush teaches using multiscale strip function to analyze the data sets in order to distinguish outlying data from the non-outlying data, as discussed above.

The patent of Schwartz et al. studies the computer-based methods and systems for sequencing of individual nucleic acid molecules. Figure 9 of Schwartz et al., as described in column 9, lines 27-28, is a variable block diagonal matrix for the dynamic programming for determining outlying data. Additionally, Figure 11 of Schwartz et al. illustrates the computerized limitations of the instant set of rejected claims.

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to modify the detection of outliers in Quackenbush by use of the computers/software of Schwartz et al. wherein the motivation would have been that the automation disclosed in Schwartz et al. expedites and increased the accuracy of the calculations [see for example, Figure 11 of Schwartz et al.].

Response to Arguments:

Applicant's arguments with respect to the instantly rejected claims have been considered but are moot in view of the new ground(s) of rejection.

It is noted that although the reference of Schwartz et al. is reiterated from the previous Office action, the role of Schwartz et al. is as a supporting reference to show computer/software limitations. The limitations of multiscale strip functions are taught in the study of Quackenbush.

The following rejection is NEWLY applied:

35 U.S.C. 103 Rejection #4:

Claims 16 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Quackenbush in view of Schwartz et al. as applied to claims 1-3, 5, 13-15, 17, 25,-27, 29, 37-39, and 43-46 above, in further view of Pearson.

Claims 16 and 28 are further limiting comprising computing the principal axis of the at least one dataset.

Quackenbush and Schwartz et al. make obvious using multiscale strip function to analyze the data sets in order to distinguish outlying data from the non-outlying data, as discussed above.

Quackenbush and Schwartz et al. do not teach rotation and shifting in order to determine principal axes.

The article of Pearson studies regression and the fits of systems of points in space. Specifically, the figure on page 566 of Pearson illustrates the acquisition of a dataset and a use of an ellipse to statistically distinguish outlying data points within the dataset in two dimensional space. The figure on page 566 of Pearson also illustrates the computation of the principal axis of the dataset wherein the ellipse is rotated for

optimal component analysis of the data and the ellipse is shifted such that the center of mass is in the center of the graph (C).

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to modify the detection of outliers using the multiscale strip functions of Quackenbush and the automation of Schwartz et al. by use of the principal component analysis in Pearson wherein the motivation would have been that the shifting and rotation of the frame for the principal components facilitated the analyzing the outlying data (see figure on page 566 of Pearson).

Response to Arguments:

Applicant's arguments with respect to the instantly rejected claims have been considered but are moot in view of the new ground(s) of rejection.

It is noted that although the reference of Schwartz et al. is reiterated from the previous Office action, the role of Schwartz et al. is as a supporting reference to show computer/software limitations. It is noted that although the reference of Pearson is reiterated from the previous Office action, the role of Pearson is as a supporting reference to show techniques of principal component analysis. The limitations of multiscale strip functions are taught in the study of Quackenbush.

The following rejection is NEWLY applied:

35 U.S.C. 103 Rejection #5:

Claims 18-20, 24, 30-32, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Quackenbush in view of Schwartz et al. as applied to claims 1-3, 5, 13-15, 17, 25,-27, 29, 37-39, and 43-46 above, in further view of Beroza et al.

Dependent claims [18-20 and 24] correspond to claims [6-8 and 12], except the claims are drawn to software instead of a method.

Dependent claims [30-32 and 36] correspond to claims [6-8 and 12], except the claims are drawn to a storage medium instead of a method.

Quackenbush and Schwartz et al. make obvious using multiscale strip function to analyze the data sets in order to distinguish outlying data from the non-outlying data, as discussed above.

Quackenbush and Schwartz et al. do not teach computing stopping points using a top-down procedure ultimately used to define boundaries between data and outlying data.

The article of Beroza et al. studies calculation of amino acid ionization constants using continuum electrostatic modeling. Specifically, Figure 2 on page 1237 of Beroza et al. illustrates an iterative top-down procedure of focusing on a portion of a protein. Two stopping points are shown wherein the region of the protein lying outside the matrix is considered to be outlying. The calculations of charge are continuum averages over an entire Monte Carlo simulation as taught in the title and page 1230 of Beroza et al. The user chooses the parameters by which the dielectric grid focuses.

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to modify the detection of outliers in Quackenbush and the

automation of Schwartz et al. by use of the iterative focusing and stopping of Beroza et al. wherein the motivation would have been that this top-down "zooming" provides a more detailed picture (albeit over a smaller region) of a biological process of interest. There would have been a reasonable expectation of success in applying this specific proteomic study of Beroza et al. to the more general genetic study of Quackenbush because the algorithm taught in Beroza et al., while specific to proteins, is a mathematical focusing algorithm generally applicable to a variety of processes, including data analysis- including the plots in Quackenbush.

Response to Arguments:

Applicant's arguments with respect to the instantly rejected claims have been considered but are moot in view of the new ground(s) of rejection.

It is noted that although the reference of Schwartz et al. is reiterated from the previous Office action, the role of Schwartz et al. is as a supporting reference to show computer/software limitations. It is noted that although the reference of Beroza et al. is reiterated from the previous Office action, the role of Beroza et al. is as a supporting reference to show top-down procedures and boundaries in data. The limitations of multiscale strip functions are taught in the study of Quackenbush.

Conclusion

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the central PTO Fax Center. The faxing of such pages must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CFR § 1.6(d)). The Central PTO Fax Center Number is (571) 273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell Negin, whose telephone number is (571) 272-1083. The examiner can normally be reached on Monday-Friday from 8:30 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Marjorie Moran, Supervisory Patent Examiner, can be reached at (571) 272-0720.

Information regarding the status of the application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information on the PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Russell S. Negin/
Examiner, AU 1631
2 December 2009